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ABSTRACT

This paper reports the findings of a review which intends to exchange ideas in the field of agricultural education. The review evaluates accomplishments over the past two decades in agricultural education and training facilities. Sections include: (1) "General Findings from the Review"; (2) "Findings Relating to the World Bank"; (3) "Overall Conclusions Regarding the Bank's Agricultural Education and Training Experience (AET)"; (4) "AET Activity of Other Donors"; and (5) "Further Questions and Issues." (YDS)

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Summary of an Agricultural Education Review:

Support for Agricultural Education in the World Bank and by Other Donors

Past and Present Perspectives

October 15, 1998

AKIS Discussion Paper

By: Anthony Willett
with input from Charles Maguire

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Foreward

AKIS is the Agricultural Knowledge and Information Systems Thematic Team, composed of World Bank staff working in or interested in research, extension, and education programs. The overall team objective is to enhance the effectiveness of Bank support to agricultural knowledge and information system development and thus contribute to the Bank's objectives of alleviating poverty, ensuring food security, and improving sustainable management of natural resources. The AKIS team emphasizes policy, institutional, and management issues associated with agricultural research, extension and education, recognizing that other thematic teams will focus on technical issues. The Team mission is to "promote the development of sustainable and productive agricultural research, extension, and education systems in Bank client countries."

"AKIS Discussion Papers " are to disseminate views, experience, and ideas, which may assist World Bank Team Leaders, national counterparts from Borrower counties, and other partners with preparation and implementation of projects to strengthen agricultural research, extension, and education programs. They attempt to disseminate lessons from innovative experiences in World Bank projects and elsewhere and make this information readily available for comment and use by project teams.

In 1998 the AKIS Thematic Team noted the limited amount of World Bank financing going into agricultural education projects and the potential negative impact that this could have on sustainability of agricultural research and extension programs and broader rural development. The AKIS Thematic Team commissioned two studies of agricultural education investments: this retrospective look at current and past investments and a companion paper looking to the future. Anthony Willettt undertook the retrospective review which included review of Bank publications, contacts with other donors and review of their strategies and publications, and discussions and input from World Bank staff. The review was finalized in collaboration with Charles Maguire, World Bank Agricultural Education Specialist.

This "AKIS Discussion Paper" summarizes the findings from the retrospective review and is intended to contribute to exchange of ideas and experience within the Agriculture Knowledge and Information Systems Thematic Team.

Marie-Helene Collion
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Agricultural Knowledge and Information
Systems Thematic Team

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Abbreviations

	AET	Agricultural education and training
	AfDB	African Development Bank
	AHE	Agricultural higher education
	AKIS	Agricultural Knowledge and Information System Thematic Team in the World Bank
	ALO	Association Liaison Office for University Cooperation in Development (of USAID)
	ANR	Agriculture and Natural Resources
	CIDA	Canada International Development Agency
	CRSP	Collaborative Research Support Program
	DFID	Department for International Development of the UK
	EESSD	Education for environmentally and socially sustainable development
	ESSD	Environmentally and Socially Sustainable Development Vice-Presidency of the World Bank
	FAO	Food and Agricultural Organization of the UN
	GTZ	German Technical Cooperation Agency
	IDB	Inter-American Development Bank
	IDU	Internal Documents Unit of the World Bank
	JICA	Japanese International Cooperation Agency
	LAC	Latin America and the Caribbean
	MOA	Ministry of Agriculture
	MOE	Ministry of Education
	NARS	National agricultural research system
	NGO	Non-governmental organization
	ODA	Overseas Development Administration (now DFID)
	OED	Operations Evaluation Department of the World Bank
	PRT	Project-related training
	RDV	Rural Development Department of the World Bank
	REE	Research, education, and extension
	T&V	Training and Visit system of extension
	TVET	Technical and vocational education and training
	UDLP	University Development linkages Project (of USAID)
	UK	United Kingdom
	UN	United Nations
	UNESCO	United Nations Educational, Scientific, and Cultural Organization
	UNEVOC	International project on Technical and Vocational Education (of UNESCO)
	UNU	United Nations University
	US	United States of America
	USAID	U.S. Agency for International Development

Summary of an Agricultural Education Review: Support for Agricultural Education in the Bank and by Other Donors

I. Background and rationale

The decision to undertake the review was taken after the March 1998 Rural Week sponsored by the Rural Development Department, which featured a session on agricultural education as part of an AKIS workshop. Specifically, concern was expressed at the workshop over the possible implications for rural sector development capacity because of the Bank's apparently low level of investment in agricultural education[1] compared with the Bank's overall investment in agriculture. The AKIS thematic team's 1998 database exercise calculated support for AET to be $126 million for the decade 1987-1997 in contrast to about $4.6 billion for agricultural research and extension over the same period.

Concerned that the apparently low Bank AET investment may be contributing to human resource weaknesses in borrowing country rural sectors which, in turn, would affect the implementation and sustainability of other agricultural investments—particularly within the broader AKIS/REE (agricultural research, education, extension) system—the AKIS thematic team resolved to review support for AET by the Bank and by other donors for the past decade, 1987-1998. The review focused on tertiary-level agricultural education, which provides the leadership and technical, professional, and field personnel for the agriculture sector. Tertiary-level AET includes agricultural higher education (AHE), middle-level AET, and agricultural technical and vocational education and training (TVET). Terms of reference for the review included a stock-taking of AET investment, a review of lessons learned, indications of any relationship between low AET support and implementation and sustainability weaknesses of Bank agriculture projects, and indications of possible reasons for low investment by the Bank and other donors.

This Discussion Paper summarizes findings from the review. The full report of the review describes Bank and other donor AET projects and components in some detail and provides a baseline survey and resource material as a foundation for further work. The report also provides definitions of different levels of AET, the review methodology, and an analysis of a range of issues arising from the survey. An introductory section provides the rationale for the review, noting the interactions between agricultural research, education, and extension, and analyzing the significance—for re-arranging funding and provision of AKIS/REE services—of the global changes that have taken place over the past decade in the economic, political, governance, fiscal, and institutional landscape for rural sector activity.

II. General findings from the review

The review found that much was done and accomplished over the previous two and more decades in terms of developing AET facilities, training AET faculty, and producing human resources. But during the past decade coinciding with the review period, the world and the environment for AET changed—dramatically. As a result, the approaches of the past that emphasized bricks and mortar, hardware, and overseas training for staff in the context of particular AET institutions are now largely insufficient. There is general agreement among donors on the need for new approaches and arrangements that reflect the changed landscape. During the past decade, AET systems, and agencies supporting them, entered a kind of hiatus during which former approaches ceased to work well and little new activity was initiated. In some respects, the occurrence of this hiatus may have been a good thing—given the changed world, the cutbacks, and the need to find ways to adjust. However, the imperatives to improve food security, develop more secure rural livelihoods, continually increase productivity and sustainability, and introduce reform in the agricultural sector have profound implications for the relevance, responsiveness, and efficiency of AKIS, including AET systems.

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[1] Hereafter the acronym "AET" is used to denote agricultural education and training.

On a positive note, the review found evidence of new thinking and policy work having occurred during the hiatus period, resulting in new guidelines for activity in Education generally, and at different levels, and in agricultural research and extension. Specifically, the Education sector (of the Bank and several of the other agencies reviewed) undertook reviews and emerged with reformist and more market-oriented, demand-driven strategies for Education at most levels. In the Agricultural sector, some borrowing countries have become increasingly concerned about market competitiveness, sector reform, sector approaches, and donor coordination. Food and agriculture is also reemerging as a donor priority. With respect to the agricultural research and extension sub-sectors, the changed landscape has been recognized, and new arrangements for funding and provision are being pursued. The same trends are having an impact now on AET systems, although AET systems appear to have fallen behind agricultural research and extension systems in terms of adjusting to the changed world and forging new arrangements based on an understanding of the changes.

As a result, the broad outlines of future AET support are becoming better understood. In a few places, some innovative approaches are emerging where there was client country readiness for transition and reform, and where AET agencies developed new, responsive policies. How a number of donor agencies are responding to the trends—in discussion and action—is strikingly similar, but their separate awareness and efforts need bringing together and harmonizing at this time.

Based on some of the developments in thinking, policy, and innovative action, the review identifies some of the possible ingredients of the next generation of AET support. The review concludes that the World Bank's task—as provider of knowledge and resources for change—is to exercise its leverage as a policy actor to shift the paradigm from conventional agricultural education focused on agricultural production and productivity through public sector funding and services *to* one of education for environmentally and socially sustainable development (ESSD) throughout the rural sector engaging in more diverse systems through a multiple field of partners and players.

Although there are variations according to region, country size, and other factors (which the review found should be addressed in AET strategies), the review found consistent evidence from the other agencies contacted to support the general conclusions reached for the Bank about the trends and shifts in demand for AET.

Positive timing of the review

From the perspective not only of the Bank but also of most other donors surveyed, the timing of the review turned out to be promising, confirming and providing a positive context for an appropriately conceptualized—and collaborative—AET initiative. The thinking and policy development of several other donors was found to coincide with that of the Bank's own Rural Development and Education sectors. Notably, IDB is refining its Education sector policies at all levels, and is noticing a resurgence of activity in the agricultural sector in the LAC region. The

AfDB has recognized that its Social/Education sector should address AET more actively in view of the importance of agriculture across the continent. An AfDB response included the suggestion of inviting the Bank review mission to Abidjan to facilitate a similar exercise within the AfDB. FAO's Agricultural Education Group has been convening a series of roundtables and expert consultations over the past few years on issues and opportunities in AET, whose recommendations on donor roles closely parallel and underscore this review's objectives. Danida has accorded high priority to the AET sub-sector within its agriculture sector policy. And DFID recently undertook a comprehensive study of AET systems in Sub-Saharan Africa to prepare policy guidelines. In other agencies also—for example, USAID and CIDA (both of which experienced severe cuts in agriculture sector support during the past decade)—there is a sense that the negative trend in agriculture sector and AET support has reached its low point. USAID, in particular, has begun facilitating innovative, partnership-based responses to strengthening developing country AET systems that reflect current realities in the AKIS environment.

Ambiguities in programming and review of AET activities

The survey aspect of the review experienced a certain amount of difficulty that reflected a lack of clarity in all agencies—including the Bank—regarding working definitions of agricultural education, and project "ownership" and responsibility for agricultural education programming—particularly as between the Education/Social/ Human Resources sector and the Agriculture/Natural Resources sector. The review identified this difficulty as a finding as well as a methodological constraint.

Methodologically, the Bank part of the review exercise involved searches of several Bank databases. These included: AKIS; the Internal Documents Unit/Image Bank sources for the Education, Agriculture, and Environment sectors; and RDV's Forestry database. Over half of the 16 projects identified in the AKIS database as "Agricultural Education" were found not to conform with the review's definition of AET. Several projects had been classified as "Agricultural Education" because of project-related training components and sectoral training aimed at building national agricultural research systems and unified, national extension systems modeled on the T&V extension system. Yet, such training did not aim primarily to strengthen AET institutions. Conversely, some randomly identified projects in the AKIS database *not* included in the "Agricultural Education" list of 16 *were* found to include support of tertiary AET institutions. In some cases, such projects that *did* strengthen AET institutions were not identified in the AKIS database because the AET components were concealed within agricultural research projects. The IDU database search found an additional 19 AET projects—6 initiated in the past decade (which the review termed "1990s projects"), and 13 in the previous decade ("1980s projects"). Due to such methodological difficulties, it is likely that there may be still more Bank AET projects unidentified by the review.

In the case of other agencies, organizational responsibility for AET was similarly divided as in the Bank. Most agencies commented on the difficulty of accessing information on AET across sectoral and regional divisions. In some instances, agency organizational structure—particularly as regards responsibility for Agriculture/NR and Education/Social services—was cited as constraining the internal collaboration necessary for effective AET programming.

III. Findings relating to the World Bank

The review identified 13 projects supporting tertiary AET during the 1987-97 period, involving a total Bank investment of some $156 million. This compared with Bank support for agriculture, agricultural research, and agricultural extension of $34,752m., $2,482m., and $2,229m. respectively over the same period. By level of AET, the Bank supported AHE in 6 countries ($108m.), middle-level AET in 6 countries ($31m.), and agricultural TVET in 4 countries ($17m.). In 3 countries, Bank projects intervened in more than one level of the national AET system.

Agricultural Higher Education

Support for Agricultural Higher Education (AHE), at $108m., involved the largest level of investment. Of this total, $74m. is accounted for by one project in India. The reduced number of AHE projects compared with earlier decades may reflect in part the reduction that has occurred in Education sector investment in Higher Education generally—which had dropped to one quarter of the Bank's Education portfolio by 1995.

The review found two types of "1990s" AHE project. One strengthens existing AHE institutions, usually as a relatively minor component to develop the human resource needs of national agricultural research, extension, or natural resource management systems. These AET components typically involve a conventional package of inputs—notably buildings, equipment, vehicles, and overseas training for AET faculty improvement. Because of the project focus on national agricultural research or extension systems, there tends to be less concern in these AET components with policy and institutional issues affecting the AET system. The "1980s projects" built AHE institutions using a similar input package, but tended to involve more free-standing, 100%-AET projects premised on employment of graduates in public sector agricultural research and extension services.

The second type of 1990s AHE project tends to strengthen, rationalize, and reform the AHE system in a broader agricultural sector context, and in the context of government efforts to liberalize and privatize the economy. These AHE projects recognize the need for AHE institutions to respond to labor market requirements as the demand for agricultural graduates shifts from the public to the private sector. Accordingly, the projects aim to: address the policy and institutional issues affecting the AHE system; match the needs of private employers through labor market studies; emphasize curriculum and syllabus reform and greater involvement of university clientele; and improve administrative and financial management.

AHE: Lessons learned

Over the past decade, the Bank has learned a great deal about AHE and Higher Education in general. The review analyzed project completion reports and audits of 1980s and 1990s AHE projects directly, as well as the findings of Education sector reports relating to Higher Education, and an Operations Evaluation Department (OED) report on Agricultural Higher Education covering the 1964-1990 period. Typically, physical and staff development objectives were met. But the recurrent expenses of new facilities grew beyond budget or university farm income, leading to sustainability issues. On occasion, faculty development through overseas training led to brain drain. Some project designs were overly optimistic, misjudging both agricultural sector realities and the troubles of national higher education systems. In other cases, Borrowers remain interested in conventional approaches, rather than in commitment to necessary reforms. Projects have met with varying success in such areas as: assessing demand for trained manpower, regulating enrollment, and assuring instructional quality.

Recent Bank thinking on Higher Education

Beyond AHE, the Bank has become conscious of a crisis in Higher Education throughout much of the world, relating to fiscal constraints, pressures for enrollment expansion, and compressed per-student expenditures, leading to a decline in the quality of teaching and research, and adverse student conditions. The Bank's current priorities and strategies for Education accord high priority to educational reform as part of economic reform, and to the Bank's role for leveraging reforms and policy change to increase efficiency and lower public costs. From a narrower project approach, current strategy emphasizes a broader sectoral approach that addresses policy and institution-building, involves key stakeholders, and builds financing partnerships. Major shifts in Bank Education lending are now occurring, which embody these recent Education policy developments.

Ownership and AHE priorities within the Bank

Related to changes in the Bank's broader Education sector policies, the review found evidence that the Education/Human Development family of Bank has disentangled itself from AHE for a number of reasons, including: i) limited labor market demand in relation to the size and running cost of an agricultural university, particularly in a small or low-income country; ii) the impression that the Agriculture family within the Bank has more resources to use in financing AHE; iii) the perception that the Bank's Agriculture and Industry sectors appear to be going ahead with investing in their sectors' higher education. The question arose as to whether the Bank's Agriculture sector was concerned more with other issues and priorities than with policy and institutional issues the Bank's Education sector is emphasizing? The second AHE project type (exemplified by India and, to some extent, Morocco) represent a new generation of AHE that takes on board many of the recent general lessons the Bank has learned.

Middle-level AET

All Bank support for middle-level AET consisted of components within larger agricultural support service-type projects. Again, components fell into 2 categories. The first involved a conventional, public-sector-oriented package of support to MOA institutes and manpower training centers servicing the needs of national agricultural research and extension systems. Several of these support the training requirements of restructuring extension systems into unified services modeled around the T&V extension system. The total training budget of these projects sometimes amounted to very high proportions of total project costs (as high as 30%), greatly exceeding support for AET institutions as such. The second, more recent, project type involved a broader approach within an ASIP (Agriculture Sector Investment Program) context. Middle-level

AET was found to be particularly tied to the changing fortunes of MOA departments, which invariably conduct this level of AET at MOA institutes. Sometimes, this level of AET (especially when it involves a conventional package of hardware inputs) is sustained only by donor-supported project-related training components.

Agricultural TVET

Whereas most AHE and Middle-level AET Bank projects have been Agriculture sector-initiated over the past decade, Agricultural TVET projects have more varied origins. Two 1990s TVET projects were initiated by the Agriculture/Natural Resources (ANR) sector, and two by the Human Resources or Education sectors. ANR projects involved training students to become farmers and agricultural entrepreneurs, and training semi-skilled workers in forestry and environment protection. The HR/Education projects tended to support reforms of curricula, teacher training, instructional methods, and course offerings, and to support better linkages with industry employers and the labor market.

Earlier (1980s) Agricultural TVET projects provided salutary lessons on the importance of accurately assessing labor market demand for TVET—a finding that conformed with the Education sector's general TVET experience. This was the subject of a major process of evaluation earlier this decade, virtually halting Bank lending in this category. Since then, a sense has prevailed that public sector vocational education had largely failed because of being overly supply-driven and insensitive to public employment opportunities.

The review summarizes many of the generic lessons learned on TVET, most of which would apply in the case of new Agricultural TVET proposals. Recent Agricultural TVET projects benefit from earlier experience, and are adopting either a cautious approach emphasizing evaluative, planning, and pilot activities, or an explicitly market-driven approach.

Project-related training

Although overall investment in project-related training (PRT) may have declined, virtually all Agriculture projects include a significant PRT component, often a very high proportion of total project costs. The review draws attention to the issue of PRT *vis a vis* support to AET systems, questioning the clarity of objectives of "Training" components, the long-run effectiveness of overseas PRT in building in-country capacity, and the probability of in-country PRT—if not carried out by a tertiary AET institution—diverting resources and even undermining the AET system.

The review found references to human resource constraints affecting the agricultural sector in many developing countries, and to associated risks posed to project implementation and sustainability. References were also found to mismatches between demands for human resources and the production of AET institutions. PRT may be viewed as an attempt to minimize the risks to project implementation posed by human resource constraints. Several references were noted to projects including PRT because graduates of AET institutions did not meet labor market requirements. The review recommends viewing the extent of PRT as a statement about the quality and adequacy of formal AET systems. Accordingly, where greater than 2% of total project costs are invested in PRT, this should raise questions about project sustainability and the adequacy of a country's AET system.

Impact of Training and Visit extension on AET systems

There have been particularly serious inadequacies in staffing T&V extension systems. T&V extension projects generally involve 2-10% of total project costs in PRT. The review noted the specific case of the qualitative and quantitative impact on AET systems of Bank investment in T&V extension systems. The review raised the need to look at this, and other extension systems, as an aspect of investigating AET scenarios.

IV. Overall conclusions regarding the Bank's AET experience

An explanation for decline in AET support

There has been a decline in Bank AET support, especially in AHE and Agricultural TVET. Middle-level sectoral AET may not have declined as much.

Bank investment in AET systems has declined for a number of reasons. Partly, it appears to have mirrored the general decline in Education sector support for Higher Education and TVET over the past decade. The decline also may reflect generic problems facing the agricultural sector. These include rural-urban demographic shifts, and the resulting shifts in locus of political power and attitudes to farming as a career that take place in the process of economic development. Governments and donors may perceive that AET institution-building projects were "completed" some years ago, and be unaware of their deteriorating condition. Low investment may reflect the relatively low political visibility and social status of AET institutions. Recent years have also seen a relative increase in funding to other areas of AKIS (research and extension) and the rise of the environment as a global concern. Government responses to recent global economic and other trends have varied. Some governments appear stuck in an outdated mode, with a serious mismatch of AET output compared with demand. Others appear more ready to tackle sector-wide reform issues. Overall, while it is the case that most governments are facing a number of severe constraints on their commitment to AET systems, there are signs that the importance of reforming and appropriately strengthening AET is recognized.

Expertise for AET: Agriculture vs. Education ownership

Collaboration between the Bank's Agriculture and Education families appears to have dropped in the past decade. Almost all AET projects are now exclusively Agriculture-sponsored, and there is less Education involvement than in past. This may reflect the decline in Bank Education sector support of Higher Education and TVET. While it may be appropriate for Agriculture, or a broader element within ESSD, to take the lead in seeking to address the education needs of the rural sector, this should not deprive AET projects of Education sector expertise. Given the learning that has taken place in Education, particularly since the late 1980s, it would seem important for AET projects to benefit from formal Education input. Yet it is precisely since that learning took place that agricultural education projects have been continuing with less Education involvement.

Limitation of AET "component" approaches

Agriculture projects commonly include AET components with the utilitarian purpose of meeting the human resource requirements of national agricultural research and extension systems. The weakness of conventional AET components built into projects whose primary objective is agricultural research or extension has tended to be in not tackling systemic policy and institutional issues affecting the AET, as distinct from the research or extension, system.

Likely ingredients of a new generation of Bank AET projects

Comparing the ingredients of earlier and more recent projects, taking account of progressions in project learning in certain countries, and drawing on general lessons learned and current policy guidelines in Education, the review identified some possible ingredients of a "new generation" of Bank AET projects. The ingredients may be seen in Table 1.

Table 1: Ingredients of a new generation of Bank AET projects

Earlier focus	Increasing emphasis in new-generation AET projects
Short-term, utilitarian PRT	Longer-term capacity-building within country AET system to support the rural sector

Single institutions, Ag Ed	AET system, AKIS and REE linkages
Selection within proliferation of AET institutions	Rationalization of AET system
Centralized control	Institutional autonomy
Public sector funding and provision	Diversified funding, and pluralistic arrangements with private sector and NGOs, including stakeholder alliances for provision
Bricks & mortar, equipment, hardware for existing AET institutions	Software, policy and institutional reform, and leadership development to transform AET systems
Output monitoring, numbers	Outcome evaluation, quality & content
Conventional agriculture, maximizing yield	Sustainable agriculture, increasing income, reducing risks, managing natural resources, rural development
Production agriculture	Market agriculture, agribusiness and agro-industry
Isolated components	Free-standing project
Single project, narrow focus	Sector-wide approach
Manpower projections	Labor market analysis
MOA/MOE rivalry	MOA--MOE collaboration and mutual learning
Supply-Driven	Demand-Driven, labor market responsive
Classroom, lectures	Farmers' field, experiential learning
Rote learning	Problem-solving learning and consciousness-raising
Biological and physical sciences	Biotechnology. Environmental and social sciences. Economics. Management. Philosophy. Ethics.
Isolation from farmers	Farmer and community involvement
Males	Females

Sources: Bank project data. Some ingredients of the new generation AET project are inspired by or adapted from Feder et al (1998) and Zijp (1998, table 5).

Piecing together a future vision for AET within the Bank

In terms of the Bank's vision for future AET support, the review found a number of separate fields of learning within the Bank which, taken together, may contribute to a future vision. Some of the pieces include:

- Education sector learning about Higher Education and TVET;

- RDV's "Vision to Action" statements;
- Trends toward systems thinking and action, as exemplified by AKIS and the efforts in some projects to address multiple levels of Education systems;
- Sector-wide programming in Agriculture and Education;
- The crafting of new funding and provision arrangements in response to the global changes of the 1990s;
- Specifically within AKIS, the emergence of similar innovative responses in AET systems to the new arrangements unfolding in agricultural research and extension;
- Emphasis on reorganization, rationalization, and reform of AET systems;
- An emphasis on labor market observation replacing manpower projections;
- Environmental education and rural education initiatives.

To harmonize the various initiatives and separate visions into a coherent policy/strategic thrust, the review proposes that the Bank plays a leadership role in conceptualizing and operationalizing an Education for Environmentally and Socially Sustainable Development (EESSD) initiative for the rural sector. The work involved in such an initiative would help to build the necessary stronger coalition of stakeholders around new generation AET projects, including the collaboration of other donor partners. It would also assist countries in charting a course through the 'transition' zone from conventional AET toward a new rural/ESD educational paradigm.

V. AET activity of other donors

The review contacted some 60 individuals in almost 20 other lending, technical assistance, and donor agencies. As resources were unavailable to assist these other agencies to undertake an equivalent stock-taking exercise to the internal review conducted by the Bank, the responses inevitably varied widely in quantity and quality. The responses of 12 agencies were sufficiently detailed or consistent to include in the review.

Other donors: Specific findings

The **Asian Development Bank** has supported only 2 AET projects in the past 10 years, both involving TVET. No further AET projects are planned at present. ADB states an emphasis on supporting human development and integrating economic, social, and environmental concerns into its agriculture programs. In Education, ADB is emphasizing basic education, quality, and relevance to market needs.

The **Inter-American Development Bank** is currently rethinking policies and guidelines for all levels of Education sector support in response to the urgent need for Education sector reform in the LAC region. AET is not being addressed specifically, but more AET programming appears likely. Recent trends in IDB Education sector lending are similar to those of the World Bank, with both Higher Education and, later, TVET de-emphasized in favor of Basic Education. There is now a re-emphasis on Higher Education and continued emphasis on Science and Technology in the context of system-wide reform. As in the Bank, IDB has developed specific new guidelines for Higher Education loans and TVET activity, and is proposing stricter criteria for approval and monitoring of project-related training. Of 39 Education sector projects in the past 10 years, only 2 were Agriculture-related—one AHE, and one TVET. Within IDB's Agriculture sector database, only 4 Education-related projects were found, none involving review-defined AET. IDB is noticing an increased demand for AET projects to meet changing demands for human resources in the region. In some cases, IDB has rejected requests until governments downsize their AET systems and makes them more responsive to market reforms. IDB's Social divisions are pressing hard to rationalize Higher Education and TVET systems before supporting them.

The **African Development Bank** allocated 12.5% of its Education sector lending for AET between 1975-1984. The level of investment now appears to be declining slightly. TVET has been a focal aspect of manpower

development, much of it strongly agriculturally oriented. Current AfDB Education policy emphasizes the need to make basic education more relevant to rural communities, and includes agricultural curricula. AHE was featured in AfDB's 1990 Agriculture Sector Policy, and focused more on the need to train agricultural researchers than extension workers. AfDB plans to expand AHE funding, and to increase policy-based lending through agriculture sector investment programs.

FAO, a technical assistance agency, has had modest resources allocated to AET. A specialized core unit and regional AET expertise services other UN agency projects. FAO expressed strong support for the Bank review, encouraged the Bank to bring together donor experience, and confirmed the Bank's review rationale and trends noticed. In its AET programming, FAO's specific concerns include: relevance of the curriculum and courses of study; quality of the teaching/learning process and teaching methodology; and management of educational institutions where agricultural subjects are a major part of the curriculum. Over the past few years, FAO's Agriculture Education Group has arranged expert consultations and publications dealing with a wide range of AET-related issues, including: strategies for higher and intermediate education and training in agriculture; integrating environment and sustainable development (ESD) themes into agricultural education and extension programs (involving 10 country cases); assessing competency-based vocational training in agriculture; and teaching and learning in agriculture. FAO literature includes recommendations on ways donors can assist AET (promoting cooperation, regional organizations, exchanges, donor coordination, links, etc.).

UNESCO has assisted AET at 3 levels: basic, TVET, and higher education. At Basic level, UNESCO's education for rural development programs involve a high proportion of AET. At the level of AHE, UNESCO's "Uni-twinning" programs support UNESCO chairs focusing on specific agricultural challenges. UNESCO's main initiative involving TVET is UNEVOC, which involves exchange activity, networking, roundtables, conferences, and publications dealing with a wide range of issues affecting TVET, much of it agriculture-related. Of special interest is the UNEVOC Study of 1997 on *TVE for Rural Development: Delivery Patterns*—a 98-page booklet summarizing an international workshop, with a number of recommendations on TVET.

UNDP has a history of assisting agricultural university development, including assistance to 15-20 schools of Forestry during the 1960s-70s. UNDP's present priorities include both basic and non-basic education. Support for non-basic human resource development includes agricultural education. Twelve of 240 agriculture projects since 1980 were dedicated to tertiary AET.

USAID has overseen a marked decline in support for Agriculture since the 1980s, from a level of over $1 billion per annum (for six years during the 1980s) to between $200 and $300 million in FYs 1997 and 1998. The number of Agriculture/ Rural Development professionals was cut by 70% between 1985 and 1997, and missions cut these positions by 62% between 1992 and 1997. Support for AET is now virtually zero, except for some NGO-provided extension training, and UDLP, CRSP and similar activities. PRT is an important mechanism used in AET and university development. However, the proportion of participant training devoted to Agriculture at American Land Grant Universities has also dropped steadily since 1992, from 50% to 12% of trainees. USAID provided assistance to over 60 agricultural university development projects during the 1950s-80s period. By 1988, USAID completed 10 country case studies of agriculture university projects, and hosted an international conference on strategic planning for the future of agriculture universities with leaders from 25 countries. The series of reports produced by this effort provide strong guidelines for future university development strategies, and recommend a fundamental departure from traditional university models (with their focus on the use of science and technology for increased agricultural production) toward a more dynamic rural development emphasis, and what that implies in organization, and pedagogical approaches. In the 1990s, USAID has pioneered a third generation of university development assistance based on current budget and institutional realities—producing collaborative partnerships to continue assisting public and private institutions of higher education in developing countries to meet the educational, research, and public service needs of their societies. These partnership programs include: the University Development Linkages Project (UDLP); the ALO/USAID initiative: Institutional Partnerships in Higher Education for International Development; the Global Research for Sustainable Development CRSP (Collaborative Research Support Program); and the Community College

International Workforce Development Partnership, an initiative of "*Building International Workforce Development Partnerships.*"

CIDA has seen similar trends to USAID's, although a recent correction beginning in 1996 is now evident. CIDA's Policy Branch analysis of trends strongly advocates an immediate increase in support for Agriculture, Food, and Nutrition activities. AET support shows a similar sharp decline with some recovery starting in 1995/96. Direct support of country AET systems is minor. CIDA's AET support has mostly strengthened research and other operational units.

The UK government's **Department for International Development (DFID)** (formerly ODA)'s natural resources database indicates that 1500 of 5000 NR projects have included an Education-related component, with 66 AET-related during the past 10 years. Analysis of these 66 projects revealed that DFID uses the technical cooperation mechanism to support Middle-level, AHE, and TVET projects, while the Joint Funding scheme and Block grants are used to assist NGO programs to support Environmental education, rural education, rural training, and adult education. In 1996, DFID funded a study of policy options for AET in Sub-Saharan Africa.

German Technical Cooperation (GTZ) has supported a strong program at university level with agricultural sciences involved in 17 out of a total of 92 university projects in the past decade (2nd place after engineering). GTZ has developed highly elaborated services in 4 areas: System enhancement; Institution building; Enhancement of relevance and efficiency; and twinning of institutions. Eleven TVET projects have been supported in the past decade. GTZ also supports Primary School Agriculture.

Danida has included a coherent AET strategy within its 1996 Agricultural Sector Policy document.

Other donors: General findings

Decline in AET support

There has been a decline in investment in agriculture generally, and in AET systems in particular, since the late 1980s. In the case of USAID and CIDA, the decline has been especially pronounced, and agriculture support has tended to become subsumed within the framework of other priority sectors. In both cases, senior policy-makers within the agencies are attempting to draw more attention to the importance of agriculture in itself and as a contributor to other priorities. ADB and IDB report many fewer AET-related projects than in the past. AfDB's support for agriculture also appears to have declined, despite the importance and pressing needs of agriculture in Africa. Some agencies are contemplating a rebound, but with new rules and arrangements focusing more on reforms, systems, and partnership approaches. In the case of European bilateral agencies, there does not appear to have been a marked decline in AET activity.

AET investment priorities and levels

All agencies have supported AHE, although there have been some differences in emphasis and approach from one agency to another. IDB has emphasized science and technology over a considerable period. USAID's approach was strongly influenced by the land grant model of agricultural university development, but the agency is now dynamically regrouping through partnership and linkage projects. DFID has tended to select and support specific disciplinary programs within universities. The reasons for the decline in AHE support are complex, but are becoming better understood. The more general issues in higher education have been well documented. AHE itself has been studied, for example, by USAID, GTZ, DFID, Danida, the World Bank, FAO, and UNESCO. In some cases, the effort is being made to move on from lessons learned to developing policy guidelines that relate to AHE. What remains is to systematically pull this work together and assess the extent to which it covers various contexts, challenges, and AET system scenarios.

TVET has received more attention from some agencies than AHE during the past decade. This may have been an attribute of the (possibly temporary) decline in AHE support, and changes in country economic structures and labor markets. TVET has been the subject of much study, and new, market-oriented, demand-driven guidelines for TVET are emerging. In addition to the World Bank, FAO, GTZ, JICA, IDB, and

UNESCO offer considerable experience, and DFID appears to be focusing its TVET effort on the ECA region.

Although Basic education was not a review focus, the review found that almost all agencies contacted are giving priority in their education sector investment to basic education. Several agencies—IDB, ADB, AfDB, UNESCO, FAO, DFID, and GTZ—are engaged in agricultural education at this level, at least to some degree, sometimes within the framework of "rural education." The notion that future farmers are raised from primary school training in agriculture may be discredited, but the notion that agriculture taught from the primary school level may make rural education more relevant and effective as a basis for future life-long learning is gaining currency. This has implications for the other levels of the AKIS/AET system. Work on these issues is in progress in several agencies.

Human resource constraints in the agricultural sector

Evidence confirms that a deterioration has taken place in the AET systems in many countries, and that a mismatch exists between the output of AET institutions and the requirements of the agriculture sector labor market. The notion of a "crisis" in public sector universities, affecting countries in all regions, is reported quite widely and becoming understood in a more sophisticated way. The enormous changes that have taken place across the world during the past 10 years have not escaped the attention of donors. All are aware of the changed economic, employment, and institutional landscape and are adjusting their policies and strategies accordingly.

AfDB reports indicate a continuing need to produce large numbers of personnel with advanced training needed to generate improved production technologies. IDB and AfDB refer to the need for greater expertise in management and sector planning and reform for agriculture. All agencies invest in project-related, or participant, training. USAID's participant training program has been immense, but, in agriculture, has dropped steadily over the past decade. AfDB and IDB both recognize that much of their investment in PRT is not evaluated, and its outcome uncertain, and intend to address its effectiveness.

New approaches

The review found a rich menu of ideas, options, and arrangements available in the experience of other donors. Wherever possible, the review included summaries, in the text or in the annexes, of new policies and guidelines donors are proposing for different levels of AET. These ideas may be assembled, analyzed and further tested, and disseminated—for different AET system scenarios, country size, economic, and political contexts, regional and bio-regional contexts, and with respect to different issues: new technology, ESD, gender, system ownership, etc.

Drawing together other donor experience, the review identified similar elements of a future generation of AET projects to those assembled for new-generation Bank projects. Some of the elements are listed in Box 1.

Box 1: Elements of a future generation of AET projects (as drawn from other donor experience)

- A shift from limited interventions in single institutions toward an approach that promotes systemic institutional change, policy reform, and good governance ideally throughout and interconnecting all levels of the AET system;
- Long-run donor commitment;
- Rationalization of AET institutions;
- Policy- and sector-based lending;
- A broader view of agriculture, and education's contribution to the agriculture sector, as demonstrated by approaches to science and technology research and education, and identification of other disciplines and cross-cutting themes that contribute to environment and natural resources management;
- Responsive, market-oriented, and demand-driven curricula and courses;

- Establishment of regional centers of AET;
- New, more competitive funding arrangements and incentives to encourage reform;
- More interaction between agricultural educational institutions and other stakeholders in agricultural education, particularly private sector employers;
- Use of joint funding and cooperative agreements between donors and universities, NGOs, and the private sector to promote networks, linkages, twinning, and other partnership arrangements between developed and developing country educational institutions;
- Emphasis on relevance, quality, and efficiency of teaching and learning;
- Greater attention in enrollment procedures to issues of equity and access of needy and intended beneficiary groups, including women.

Comparative advantage of different donors in AET programming

The general relative strengths and limitations of different kinds of development lending, technical assistance agencies, and donors obviously apply in the case of AET, and are illustrated in Box 2.

There are clear possibilities for constructive collaboration and synergy among the efforts of different donors and donor types in forging a new generation of AET support. From their different vantage points, and along different paths—but more or less simultaneously—donors have gravitated towards a fairly consistent analysis of the challenges facing AET, and are expressing similar views on what needs doing. To reach synergy requires players to investigate and share their experience and their comparative advantages and limitations. Often, a number of different donors have assisted the same institutions or the same countries over time, or at the same time. In selected cases, this experience should be shared and analyzed with all the partners involved, lessons articulated, and new arrangements forged for a new generation of support.

AET sectoral and organizational responsibility: Transcending the divisions

As in the Bank, in most donor and lending agencies responsibility for agricultural education is functionally split—generally between education/social sector divisions and agriculture/natural resources divisions. In relatively few cases have donors articulated guiding strategies and policies for agricultural education as a distinct field. More commonly, agency policies exist for the different levels of education, with more specific guidelines developed for such fields as science, technology, math, etc. In terms of a policy theme, agricultural education tends to be perceived along with agricultural research and extension as a component of the AKIS or REE system. Occasionally, more advanced systems thinking occurs within a broader, ESD conceptual framework (e.g. UNU, FAO). Danida is one bilateral donor which has articulated a coherent policy for agricultural education, although it is more or less limited within a conventional Agriculture sector paradigm with ENV and SOC attachments.

Box 2. Comparative advantage of different donors in AET programming

Banks have the greatest potential leverage at the level of national policy systems for whole sectors. Depending on their access to additional bilateral funds, they can also become more than project financiers, providing technical assistance for other complementary activities.

The inter-governmental **UN agencies** have used their own professional staff and networks of professional contacts to investigate best practices, provide technical assistance, organize networks, expert consultations and roundtables, and publish extensively to disseminate lessons learned and guidelines for governments and other donors. They have also been in a good position to facilitate regional initiatives.

Bilateral agencies have strong political and cultural ties with certain countries and regions, strengths in particular sub-sectors, industries, and disciplines, and experience in particular approaches, arrangements, and models for funding and service provision. From their often longer-term, more in-depth, and more direct engagement in country projects, they may also be able to influence national policy development, or, at the least, contribute valuable experience and insight to that process.

A coherent policy framework for AET is frequently lacking at national level because responsibilities for AET at that level are often divided between several ministries or statutory bodies. The "problem of collaboration and coordination" between ministries, and sometimes between them and local government bodies, appeared in the AET project experience of several of the agencies that participated in the review. In the case of most of the responding donors, even obtaining information on agricultural education as a program area involved

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a lot of detective work. In only a very few cases was there much evidence of intentional collaboration across internal divisions in order to address AET issues.

The review questioned whether collaboration was the obstacle to understanding and promoting AET as a program area, or whether the more important constraint was a lack of clarity in identifying and defining AET as a field. The review concluded that promoting AET as a program area involved an iteration between both processes, and that more needs doing in two areas: (i) to promote a future vision of agriculture in the broadest terms, including: Agriculture's relationship with natural resource management, rural development, and knowledge and understanding of ESSD; Agriculture's organization in light of changes in economies, governance, and information and communications; and the impact on Agriculture of developments in science and technology; and (ii) educational research and institutional innovation in AET. At least the same amount of effort that has been invested in case studies and innovations in extension and research needs investing now in understanding and promoting innovative AET systems and arrangements. In this age of new forms of communication and partnership, both processes, but particularly the second one, will involve extensive collaboration among stakeholders. The process itself will forge collaboration, and former obstacles will be overcome or become irrelevant to the dynamics of the new arrangements.

VI. Further questions and issues

In further work the Bank undertakes in revitalizing agricultural education, the review identified a number of issues as meriting attention. With respect to the Bank's own programs, these included: i) a systematic study of project-related training (including continuing, in-service training) in the context of building country AET systems; ii) a study of the influence of T&V and other extension systems on AET systems; iii) implications for AET system functioning of different extension and research systems, and trends in their funding and provision; iv) analysis of lessons learned relating to AET in the environment, natural resources, forestry, irrigation, and other agricultural sub-sectors not adequately represented in this review's project sample; v) the effect of region, politics and governance, country size, and stage of economic development on human resource constraints in different sub-sectors and on approaches to AET at different levels; vi) preparation of case studies based on progressions of project experience in countries with substantial sequences of AET-related investment.

The review of other donor experience confirmed the need for the further work identified in the World Bank section, although the issue of the influence of the T&V system on AET systems would be of greatest interest to the Bank. The other topics identified in the Bank section of the review would benefit from interaction with other donors. The need for studying PRT, in particular, was endorsed.

Further work suggested as a result of reviewing other donor experience included: i) collaborative case studies and analysis of achievements and challenges in countries and institutions where several donors have been involved over a long time period—with a view to continued partnership and action involving all stakeholders, and identifying and building on comparative advantages to achieve a synergistic outcome; ii) requests to other donors to conduct their own, more comprehensive internal reviews in order to establish a more consistent baseline of information, and identify their areas and levels of experience, expertise, and comparative advantage; iii) assembling new policies and guidelines different donors are proposing for different levels of AET; iv) documenting and widely disseminating innovative approaches to AET provision; v) studies of other levels of AET not covered by this review; vi) the impact of university research-strengthening components on the educational function of universities.

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